

## REMARKS

In the Official Action mailed on **December 29, 2004**, the Examiner reviewed claims 1-11 and 26. Claims 1-11 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Varghese et al. (USPN 6,449,256, hereinafter “Varghese”) in view of Kloth et al. (USPN 6,570,877, hereinafter “Kloth”).

### Rejections under 35 U.S.C. § 103(a)

Independent claims 1, 9 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Varghese in view of Kloth. Applicant respectfully points out that Varghese teaches returning the **best matching filter** *by performing a best matching prefix operation for each field in a given packet and concatenating the results to form a crossproduct* (see Varghese column 12, lines 1-6; column 12, lines 12-16). The best matching prefix operation uses a table for each given field to allow for “sliced” prefix or range lookups (see Varghese column 10, lines 61-64). The crossproduct is then looked up in a CrossProductTable to get the best matching filter (see Varghese column 13, lines 15-24). The CrossProductTable is formed by one of two methods: pre-computing all possible crossproducts (see Varghese column 12, lines 60-65) or “on demand crossproducting” where the CrossProductTable is calculated on-the-fly (see Varghese column 15, lines 32-43).

In contrast, the present invention is directed to finding **the longest matching prefix** by using *special length encoding* (SLE) which contains information on the *degree of relevance* (see page 6, lines 7-8 of the instant application). When a packet arrives at the router, the content addressable memory (CAM), sends *all possible matches* to the LPE (see page 6, lines 3-6 of the instant application). The degree of relevance is based on the number of “1s” in the mask of an entry (see page 6, lines 15-21 of the instant application). The length based priority encoder (LPE) uses the degree of relevance information to *remove less relevant matches from consideration* by changing the less relevant matches to a

non-matching status (see page 6, lines 8-11; page 6, line 22 to page 7, line 6 of the instant application). Therefore, the longest matching prefix is found by eliminating less relevant matches until there is only one match left.

The benefit of using SLE which contains information on the degree of relevance of a match to find the longest matching prefix is that an extra costly step of forming a CrossProductTable is not required.

There is nothing in the combined system of Varghese or Kloth, either separately or in concert, that suggests comparing codes corresponding to matching Internet Protocol address prefixes to find a longest matching Internet Protocol address prefix by using information in the code that signifies the degree of relevance of the match thereby allowing the encoder to find more relevant matches by removing less relevant matches from consideration, wherein finding more relevant matches by removing less relevant matches from consideration involves changing the matching status of the less relevant matches to a non-matching status.

Accordingly, Applicant has amended independent claims 1, 9 and 26 to clarify that the present invention compares the codes corresponding to matching Internet Protocol address prefixes to find a longest matching Internet Protocol address prefix, *wherein comparing the codes corresponding to matching Internet Protocol address prefixes to find a longest matching Internet Protocol address prefix involves using information in the code that signifies the degree of relevance of the match thereby allowing the encoder to find more relevant matches by removing less relevant matches from consideration, wherein finding more relevant matches by removing less relevant matches from consideration involves changing the matching status of the less relevant matches to a non-matching status.* These amendments find support on page 6, lines 7-11; page 6, lines 15 to page 7, line 6 of the instant application.


Hence, Applicant respectfully submits that independent claims 1, 9, and 26 as presently amended are in condition for allowance. Applicant also submits that

claims 2-8, which depend upon claim 1, and claims 10-11, which depend upon claim 9, are for the same reasons in condition for allowance and for reasons of the unique combinations recited in such claims.

**CONCLUSION**

It is submitted that the present application is presently in form for allowance. Such action is respectfully requested.

Respectfully submitted,

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Date: January 11, 2005

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